

In re Patent Application of

Atty SCS-124-1104
Dkt.

C# M#

BARNES et al

TC/A.U. 2814

Serial No. 10/522,988

Examiner: A. Kalam

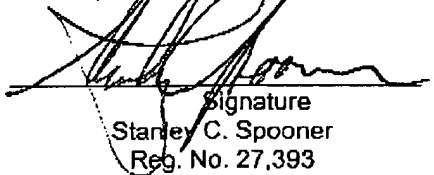
Filed: February 2, 2005

Date: July 8, 2008

Title: OPTOELECTRONIC DEVICES

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450**RECEIVED
CENTRAL FAX CENTER****JUL 08 2008****FACSIMILE CERTIFICATE**

I hereby certify that this Petition to the Commissioner is being transmitted by facsimile to the Patent and Trademark Office on July 8, 2008, specifically to 571-273-8300.


Signature
Stanley C. Spooner
Reg. No. 27,393

No. of pages transmitted (including this cover sheet): 16

Sir:

RESPONSE/AMENDMENT/LETTER

This is a response/amendment/letter in the above-identified application and includes an attachment which is hereby incorporated by reference and the signature below serves as the signature to the attachment in the absence of any other signature thereon.

☒ **Petition to the Commissioner attached.****Fees are attached as calculated below:**Total effective claims after amendment 0 minus highest number
previously paid for 20 (at least 20) = 0 x \$50.00 \$0.00 (1202)/\$0.00 (2202) \$Independent claims after amendment 0 minus highest number
previously paid for 3 (at least 3) = 0 x \$210.00 \$0.00 (1201)/\$0.00 (2201) \$If proper multiple dependent claims now added for first time, (ignore improper); add
\$370.00 (1203)/\$185.00 (2203) \$Petition is hereby made to extend the current due date so as to cover the filing date of this
paper and attachment(s)
One Month Extension \$120.00 (1251)/\$60.00 (2251)
Two Month Extensions \$460.00 (1252)/\$230.00 (2252)
Three Month Extensions \$1050.00 (1253)/\$525.00 (2253)
Four Month Extensions \$1640.00 (1254)/\$820.00 (2254)
Five Month Extensions \$2,230.00 (1255)/\$1115.00 (2255) \$***(Petition for 1-month extension of time and petition fee included with Amendment Under Rule 116 filed concurrently herewith)***

Terminal disclaimer enclosed, add \$130.00 (1814)/\$65.00 (2814) \$

☐ Applicant claims "small entity" status. ☐ Statement filed herewith

Rule 56 Information Disclosure Statement Filing Fee \$180.00 (1806) \$ 0.00

Assignment Recording Fee \$40.00 (8021) \$ 0.00

Other: \$ 0.00

TOTAL FEE \$ 0.00☐ **CREDIT CARD PAYMENT FORM ATTACHED.**The Commissioner is hereby authorized to charge any deficiency, or credit any overpayment, in the fee(s) filed, or asserted to be filed, or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our Account No. 14-1140. A duplicate copy of this sheet is attached.901 North Glebe Road, 11th Floor
Arlington, Virginia 22203-1808
Telephone: (703) 816-4000
Facsimile: (703) 816-4100
SCS:kmmNIXON & VANDERHYE P.C.
By Atty: Stanley C. Spooner, Reg. No. 27,393Signature: 

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of

Confirmation No. 4650

BARNES et al

Atty. Ref.: 124-1104

Appl. No. 10/522,988

TC/A.U. 2814

Filed: February 2, 2005

Examiner: A. Kalam

For: OPTOELECTRONIC DEVICES

**RECEIVED
CENTRAL FAX CENTER****JUL 08 2008**

* * * * *

July 8, 2008

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

PETITION

Appellants respectfully petitions the Commissioner to reverse the Examiner's finding that there is no common technical feature recited with respect to elected claims 1, 2, 4, 6-11, 14 and 15 and withdrawn claims 3, 12, 13 and 16 and to require consideration of all pending claims.

A one month extension of time petition has been concurrently filed with a Rule 116 Amendment extending the Appeal Brief filing date from one month after the mailing date of the Panel Decision on June 6, 2008, one additional month up to and including August 6, 2008.

The Restriction Requirement was made final in the Final Official Action mailed January 2, 2008 and a Notice of Appeal was filed May 2, 2008 along with a Pre-Appeal Brief Request for Review. The Examiner's contention in the Final Rejection is that there is no common technical feature that is patentable over the Scherer reference and therefore the Restriction Requirement with respect to claims 3, 12, 13 and 16 is appropriate. Applicants note that even though the Examiner states in the Final Rejection that claim 3 is withdrawn from consideration, the Examiner includes a rejection of claim 3 (page 5, section 3 of the Final Rejection) as being

obvious over the Scherer/Arnold combination. Clarification of the status of claim 3 is also requested.

The Examiner's incorrect interpretation of the words "cover" and "separate."

The Examiner's withdrawal of claims 3, 12, 13 and 16 is predicated upon his belief that the claim language requiring "a thin semitransparent metal covering and separating said layer from air" does not actually require that it both "covers" and "separates" the layer from air as specified.

The Examiner alleges that the Scherer reference teaching of "partial covering" and "partial separating" is a teaching of covering and separating because the claim does not specify "covering and separating said entire layer from air." Applicants make of record the conventional dictionary (both scientific and regular) definitions of the words "separate" and "cover." In as much as only the phrase "partially covered" or "partially separated" means something less than "covered" and "separated," Applicants maintain their position that the Examiner has not properly construed the plain claim language.

However, Applicants have also submitted concurrently herewith a Rule 116 Amendment adding the limitation "entire" as suggested by the Examiner in the June 19, 2008 Interview Summary Record although Applicant does not believe that this changes the scope of the claims. However, for the purpose of this Petition against the finality of the Restriction Requirement, Applicants will treat the Rule 116 Amendment as being denied (since entry of the Amendment would moot the Petition).

Applicants include herewith pages 300 and 1073 from Webster's Ninth New Collegiate which is copyrighted 1983. Thus, even twenty-five years ago, the English language definitions of "cover" and "separate" have been in the public domain and well known. The term "cover" on page 300 is defined as "to lie over" or "to lay or spread something over." Thus, the term by itself

clearly means to cover the entire object otherwise if something less than covering the entire layer is meant, conventional English language usage will specify "partially cover," which means it only covers a portion of the object. As used in the originally claim 1 the term is "covering" thereby requiring the entire layer to be covered by the thin semitransparent metal.

Moreover, one of ordinary skill in the art in the semiconductor field would realize that a "thin semitransparent metal" electrode must cover the entire layer in order to most properly operate in its claimed capacity as an electrode.

Additionally, the word "separate" on page 1073 means "to set or keep apart." If portions of the semitransparent metal electrode have holes in them i.e. if it does not entirely separate the claimed layer "from air" then it does not "set or keep apart" the layer and the air because air will be in contact with some portion of the layer. Again the conventional meaning of the word "separate" is to keep the objects being separated from each other, i.e. "to set or keep apart."

The independent claim does not say "partially cover" or "partially separate" and therefore the disclosure in the Scherer reference, which does teach at best partially "separating," does not teach the claimed combination of elements.

Similarly, Applicant encloses pages 475, 394 and 1795 from the McGraw-Hill Dictionary of Scientific and Technical Terms. It is noted that the term "covered electrode" references the definition of the term "coated electrode" and that definition is a metal "wire covered with metal oxides and silicates and used a filler-metal electrode in arc welding." Again, those of ordinary skill in the art will know that a coated electrode is coated to separate the electrode from oxygen in the air so that metal oxides are not formed during "arc welding."

Thus, "covered" in the sense used in the claim means to separate the specified layer "from air." Likewise, the term "separator" in the McGraw-Hill dictionary on page 1795 teaches "any machine for separating materials, as the magnetic separator." Again, this is consistent with the dictionary definition of the term "separate" and it means "to set or keep apart." Even the

definition of a storage battery "separator" requires a porous insulating sheet used between the lead plate of a storage battery and, while they are porous (in order to allow electrolytes to flow between the battery plates) they prevent the battery plates from touch each other, i.e., shorting out. Thus, the battery separator separates the battery plates so as to "set or keep apart" those plates thereby preventing the undesirable internal short in the battery.

Applicants enclose copies of both the Webster's Dictionary definitions and the McGraw-Hill Dictionary of Scientific and Technical Terms definitions for the Commissioner's consideration.

In view of the fact that the Examiner's Restriction Requirement was predicated on the Scherer reference teaching "covering and separating said layer from air" and the Examiner's finding that Scherer's teaching of partial covering and partial separating disclosed the claimed "covering and separating said layer from air," the Commissioner should find the Examiner claim construction erroneous.

The Examiner has alleged that the sole teaching in Scherer of "covering and separating" is in Figure 3, which is a diagrammatical side cross-sectional view of a unpatterned metal clad microcavity analyzed using the FDTD method (Scherer, column 2, lines 62-64). Scherer teaches the "patterning" of the unpatterned silver layer in Figure 3 at column 5, lines 38-41. The patterning results in a thickness of the silver electrode layer "between 40nm and 0nm." Column 8, lines 29-32. Zero thickness to those of ordinary skill in the art means that there is no metal layer in that area of 0nm thickness. Thus, the Examiner admits that Scherer does not teach covering the surface and indeed there would be holes in the covering.

In a telephone interview on May 2, 2008, the Examiner and his supervisor basically admitted that Scherer reference did not teach "covering and separating of the layer from air", but suggested that the English language definitions of covering and separating does not require actual "covering" or "separating" (see Interview Summary record mailed June 19, 2008 more

than six weeks after the interview). The above-referenced dictionary definitions do talk about "to lie over" or "to lay or spread something over" with respect to "cover" and "to set or keep apart" with respect to "separate" and are dispositive of the issue.

Thus, the only evidence of record establishes that the word "entire" is unnecessary when the terms "cover" and "separate" are used. Applicants' claim merely requires "covering and separating from air" and it is clear that due to the "Onm holes" in the patterned layer of Scherer, there is no separation of the underlined layer from air. Accordingly, Scherer does not disclose Applicants claimed feature of "covering and separating said layer from air" because air can contract the underlined layer at anyone of the Onm "holes"

As a result of the above, because Scherer does not disclose "the common technical feature" linking the withdrawn claims (3, 12, 13 & 16) to Applicants' independent claims, Applicants respectfully petitions the Examiner to direct the Examiner to consider withdrawn claims 3, 12, 13 and 16.

Expedited consideration of this Petition is respectfully requested in that an Appeal Brief is due in this case on August 2, 2008 or the extended due date of August 6, 2008 in view of the adverse decision by the Pre-Appeal Panel mailed June 6, 2008 (Paper No. 20080604). The Examiner's six week delay in providing Applicants the Interview Summary record which makes of record the Examiner's erroneous rational for maintaining the Restriction Requirement has resulted in Applicants' delay in preparing and filing this Petition to the Commissioner.

Applicants should be accorded a decision from the Commissioner with respect to the Restriction issue in view of the Scherer reference prior to the filing of the Appeal Brief in this case (should the Appeal Brief be necessary). As noted above, Applicants have also filed concurrently herewith, by fax, a Rule 116 Amendment adding what is believed to be the redundant claim language "entire" suggested by the Examiner to each of the independent claims.

While Applicants believe the language "cover" and "separate" clearly distinguish over the prior art, Applicants is not adverse to the addition of this language.

Applicants also conducted a telephone interview with supervisory Phat Cao on June 26, 2008. Supervisor Cao was asked about the group's policy of adding redundant claim limitations, i.e., "entire" and he indicated that there would be no further consideration of this case. However, it is possible that Applicants' undersigned representative may have misunderstood the supervisor's intent during the telephone interview as there appear to be substantial language miscommunication.

Accordingly, in view of the late delivery of the Interview Summary record from May 2, 2008 (June 19, 2008 was the mailing date) clarifying the Examiner's claim language interpretation, it appears that it is the Examiner's English language interpretation which is in error and, if this is promptly corrected then the withdrawn claims will be added to the rejected claims on appeal. However, this entire issue may be mooted if the Examiner adds the language that he proposed (by entering the Rule 116 amendment) in order to distinguish over the Scherer reference (even though Applicants do not believe this redundant language is needed).

Having responded to all issues set out in both the Final Rejection and as clarified in the recently received Interview Summary record, it is respectfully submitted that all claims 1-4 and 6-16 are in condition for allowance and Notice to that affect is respectfully requested. In the event the Examiner is of the opinion that a brief telephone or personal interview will facilitate allowance of one or more of the claims, he is respectfully requested to contact Applicants' undersigned representative.

PETITION
U.S. Application No. 10/522,988

NIXON VANDERHYE PC

Fax 703+816+4100

Jul 8 2008 04:31pm P008/016

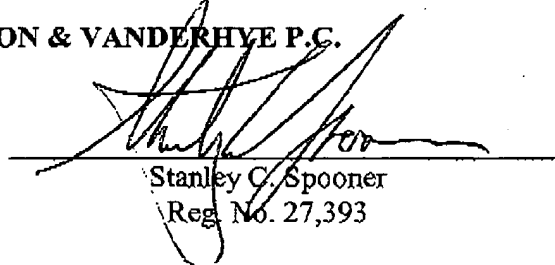
Atty. Docket No.: 124-1104

Art Unit No.: 2814

Respectfully submitted,

NIXON & VANDERHYE P.C.

By:



Stanley C. Spooner
Reg. No. 27,393

SCS/edg
901 North Glebe Road, 11th Floor
Arlington, VA 22203-1808
Telephone: (703) 816-4000
Facsimile: (703) 816-4100

Attachments:

Webster's Ninth New Collegiate Dictionary pages 300 & 1073
McGraw-Hill Dictionary of Scientific and Technical Terms pages 475, 394 & 1795

RECEIVED
JUL 10 2008
U.S. DEPARTMENT OF JUSTICE
FEDERAL BUREAU OF INVESTIGATION
WASHINGTON, D.C.

Copyright © 1983 by Merriam-Webster Inc.

Philippines Copyright 1983 by Merriam-Webster Inc.

Library of Congress Cataloging in Publication Data
Main Entry under title:

Webster's ninth new collegiate dictionary.

Based on Webster's third new international
dictionary.

Includes index.

1. English language—Dictionaries. I. Merriam-
Webster Inc.

PE1628.W5638 1983 423 82-20801

ISBN 0-87779-508-8

ISBN 0-87779-509-6 (indexed)

ISBN 0-87779-510-X (deluxe)

COLLEGIATE trademark Reg. U.S. Pat. Off.

All rights reserved. No part of this work covered by the copyrights hereon may be re-produced or copied in any form or by any means—graphic, electronic, or mechanical, including photocopying, taping, or information storage and retrieval systems—without written permission of the publisher.

Made in the United States of America

345RMcn83

COMPRIZE 10: to deal with: TRBAT 11 a: to have as one's territory or field of activity: (one salesman ~s the whole state) b: to compete about: (two men ~ed for the job) c: TRAVELER 13: to place one's stake in equal jeopardy with in a bet 14: to buy securities or commodities for delivery against (an earlier short sale) ~w 1: to conceal something illicit, blameworthy, or embarrassing from notice (~w up a friend) 2: to act as a substitute or replacement (during an absence) — cover-able \kəv-'ə-jə-bəl/ adj — cover-er \-'vr-ər/ n — cover one's tracks: to conceal traces in order to elude pursuers — cover the ground or cover ground: to deal with a subject or assignment in a particular manner (the new book of science covers a lot of ground)
cover n often attrib (14c) 1: something that protects, shelters, or guards: as, a: natural shelter for an animal; also: the factors that provide such shelter b: (1) a position or situation affording protection from enemy fire (2) the protection offered by airplanes in tactical support of a military operation 2: something that is placed over or below another thing: as, U.D. for b: a binding or case for a book or the back cover of a magazine; also: the front or back of such a binding c: an overcoat or outer layer esp. for protection (a mattress ~) d: a tablecloth and the other table accessories e: COVER CHAIRS f: ACOR 2: a cloth used on a bed 3: something (as vegetation or snow) that covers the ground 4: the extent to which clouds obscure the sky 3 a: something that conceals or obscures (under ~ of darkness) b: a masking device: PRETEXT (the project was a ~ for intelligence operations) 4: an envelope or wrapper for mail 5: one who substitutes for another during an absence — cover-less \-'vr-ls/ adj — under cover 1: in an envelope or wrapper 2: under concealment; in secret
cover-age \kəv-'ə-rj/ n (1912) 1: the act or fact of covering 2: something that covers: as, a: inclusion within the scope of an insurance policy or protective plan: INSURANCE b: the amount available in making such a provision within the scope of discussion or reporting (the news ~ of the trial) 3: the total group covered: SCOPE 4: a: all the risks covered by the terms of an insurance contract b: the number or percentage of persons reached by a communications medium
cover-all \kəv-'ə-rl/ n (1824) : a one-piece outer garment worn to protect other garments — use, used in pl. — cover-called \-'rɔld/ adj
cover-all \kəv-'ə-rl/ adj (1895) : COMPREHENSIVE (~ provisions)
cover charge n (1921) : a charge made by a restaurant or nightclub in addition to the charge for food and drink
cover crop n (1899) : a crop planted to prevent soil erosion and to provide humus
covered bridge n (1809) : a bridge that has its roadway protected by a roof and enclosing sides
covered ears n (1894) : a smut disease of grains in which the spore masses are held together by the persistent grain membrane and glumes
covered wagon n (1743) : a wagon with a canvas top supported by bowed strips of wood or metal
cover girl n (1915) : an attractive young woman whose picture appears on a magazine cover
cover glass n (1831) 1: a piece of very thin glass used to cover material on a glass microscope slide 2: a sheet of plain glass applied to a transparency for protection
covering \kəv-'(ə-)rɪŋ/ n (14c) : something that covers or conceals
covering adj (1887) : containing explanation of or additional information about an accompanying communication (a ~ letter)
coverlet \kəv-'ə-rlət/ n (14c) [ME. alter. of *coverlet*, fr. AF *coverlet*, fr. OF *cover* + *lit* bed, fr. L *lectus* — more at LIE] (14c) : BEDSPREAD
cover shot n (1946) : a wide-angle photographic shot that includes a wide area
cover-slip \kəv-'ə-sli:p/ n (1875) : COVER GLASS 1
cover story n (1948) : a story accompanying a magazine-cover illustration
cover \kəv-'(ə-)rɪt, kəv-'ərɪt/ [ME. fr. MF, pp. of *cover* to cover] (14c) 1: not openly shown, engaged in, or avowed: VEILED (a ~ alliance) 2: covered over; SHELTERED 3: being married and under the authority or protection of one's husband *syn* see SECRET — cover-ly adv — cover-ness n
cover \kəv-'(ə-)rɪt, kəv-'ərɪt/ n (14c) 1 a: hiding place: SHELTER b: a thicket affording cover for games c: a masking or concealing device 2: a feather covering the bases of the quills of the wings and tail of a bird — see ILLUSTRATION 3: a firm durable (willed sometimes waterproofed cloth) of mixed-color yarns
covering \kəv-'ə-rlɪŋ, kəv-'ərɪŋ/ n (13c) 1 a: COVERING b: a woman (1) (2) the status a woman acquires upon marriage under common law
cover-up \kəv-'ə-ʊp/ n (1927) 1: a device or stratagem for masking or concealing (his garrulousness is a ~ for insecurity); also: a usu. concerted effort to keep an illegal or unethical act or situation from being made public 2: a loose outer garment
cover \kəv-'(ə-)rɪt/ [ME. *coveren*, fr. OF *coverier*, fr. *covert* *desire*, modif. of L *cupidiat*, *cupiditas*, fr. *cupido* desirous, fr. *cupere* to desire; akin to Gk *kupnos* (smoke)] v (13c) 1: to wish for enviously 2: to desire (what belongs to another) inordinately or culpably ~w 1: to feel inordinate desire for what belongs to another *syn* see DESIRE
cover-able \-'və-bəl/ adj — cover-er \-'vr-ər/ n — cover-ingly \-'vr-ɪŋ-ly/ adv
cover-ers \-'vr-əz/ adj (13c) 1: marked by inordinate desire for wealth or possessions or for another's possessions 2: having a craving for possession (~ of power) — cover-ously adv — cover-ousness n
syn COVETOUS, GREEDY, ACQUISITIVE, GRASPING, AVARICIOUS mean having or showing a strong desire for material possessions. COVETOUS implies inordinate desire often for another's possessions; GREEDY stresses lack of restraint and often of discrimination in desire; ACQUISITIVE implies both eagerness to possess and ability to acquire and keep; GRASPING adds to COVETOUS and GREEDY an implication of selfishness and often suggests unfair or ruthless means; AVARICIOUS implies obsessive acquisitiveness esp. of money and strongly suggests stinginess.
cover \kəv-'(ə-)rɪt, kəv-'ərɪt/ n (14c) [ME. fr. MF *cover*, fr. OF, fr. *cover* to sit on, cover, fr. L *cupido* to desire, to want at RIF] (14c) 1: a mature bird or pair of birds with a brood of young; also: a small flock 2: COM-PANY, GROUP

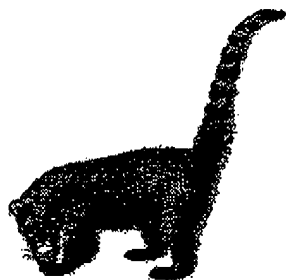
covalent crystal

coyote hole

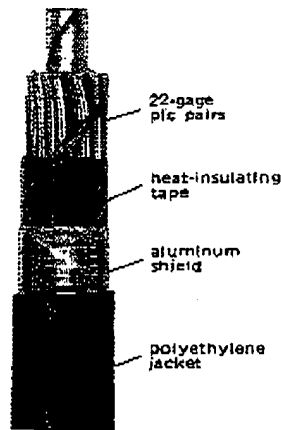
475

- covalent crystal** [CRYSTAL] A crystal held together by covalent bonds. Also known as valence crystal. { kō'vā-lənt 'krīst-əl }
- covalent hydride** [INORG CHEM] A compound formed from a nonmetal and hydrogen, for example, H_2S and NH_3 . { kō'vā-lənt 'hi,drīd }
- covalent radius** See atomic radius. { kō'vā-lənt 'rād-ē-əs }
- covariance** [STAT] A measurement of the tendency of two random variables, X and Y , to vary together, given by the expected value of the variable $(X - X[OB])(Y - Y[OB])$, where $X[OB]$ and $Y[OB]$ are the expected values of the variables X and Y , respectively. { kō'ver-ē-əns }
- covariance analysis** [STAT] An extension of the analysis of variance which combines linear regression with analysis of variance; used when members falling into classes have values of more than one variable. { kō'ver-ē-əns ə,nal-ə-zəs }
- covariant** [RELAT] A scalar, vector, or higher-order tensor. { kō'ver-ē-ənt }
- covariant components** [MATH] Vector or tensor components which, in a transformation from one set of basis vectors to another, transform in the same manner as the basis vectors. { kō'ver-ē-ənt kəm'pō-nēnts }
- covariant derivative** [MATH] For a tensor field at a point P of an affine space, a new tensor field equal to the difference between the derivative of the original field defined in the ordinary manner and the derivative of a field whose value at points close to P are parallel to the value of the original field at P as specified by the affine connection. { kō'ver-ē-ənt dō'rīv-əd-iv }
- covariant equation** [PHYS] An equation which has the same form in all inertial frames of reference; that is, its form is unchanged by Lorentz transformations. { kō'ver-ē-ənt i'kwā-zhən }
- covariant functor** [MATH] A functor which does not change the sense of morphisms. { kō'ver-ē-ənt 'fank-tər }
- covariant index** [MATH] A tensor index such that, under a transformation of coordinates, the procedure for obtaining a component of the transformed tensor for which this index has value p involves taking a sum over q of the product of a component of the original tensor for which the index has the value q times the partial derivative of the q th original coordinate with respect to the p th transformed coordinate; it is written as a subscript. { kō'ver-ē-ənt 'in,dēks }
- covariant tensor** [MATH] A tensor with only covariant indices. { kō'ver-ē-ənt 'ten-sər }
- covariant theory** [PHYS] A theory in which the equations have the same form in any inertial reference frame, the frames being related to each other by Lorentz transformations. { kō'ver-ē-ənt 'thē-ō-rē }
- covariant vector** [MATH] A covariant tensor of degree 1, such as the gradient of a function. { kō'ver-ē-ənt 'vek-tər }
- cove** [GEOGR] 1. A small, narrow, sheltered bay, inlet, or creek on a coast. 2. A deep recess or hollow occurring in a cliff or steep mountainside. { kōv }
- covelite** [MINERAL] CuS An indigo-blue mineral of metallic luster that crystallizes in the hexagonal system; it is usually massive or occurs in disseminations through other copper minerals and represents an ore of copper. Also known as indigo copper. { kō've,līt }
- cover** [MATH] See covering. [MIN ENG] The thickness of rock between the mine workings and the surface. { 'kāv-ər }
- coverage** [COMMUN] See service area. [GRAPHICS] In microfilming, the portion of a document plane included in the lens field. { 'kāv-rīj }
- cover crops** [AGR] Crops, especially grasses, grown for the express purpose of preventing and protecting a bare soil surface. { 'kāv-ər ,krāps }
- covered electrode** See coated electrode. { 'kāv-ər-d i'lek-trōd }
- covered smut** [PL PATH] A seed-borne smut of certain grain crops caused by *Ustilago hordei* in barley and *U. avenae* in oats. { 'kāv-ər-d 'smət }
- cover half** [MET] The stationary portion of a die. { 'kāv-ər 'ha:f }
- cover hole** [MIN ENG] One of a group of boreholes drilled in advance of mine workings to probe for and detect water-bearing fissures or structures. { 'kāv-ər ,hōl }
- covering** [MATH] For a set A , a collection of sets whose union contains A . Also known as cover. { 'kāv-rīj }
- covering power** [ENG] The degree to which a coating obscures the underlying material. [MET] The ability of an electroplating bath to produce a coating at a low current density.
- troplating bath** to produce a coating at a low current density.
- [OPTICS]** The field of view over which a camera lens can produce a sharp image, frequently expressed as an angle. { 'kāv-rīj ,paʊ-ər }
- cover plate** [ENG] A pane of glass in a welding helmet or goggles which protects the colored lens excluding harmful light rays from damage by weld spatter. { 'kāv-ər ,plāt }
- covers** See covered sine.
- covered sine** [MATH] The covered sine of A is $1 - \sin A$. Denoted covers. Also known as coversine; versed cosine. { 'kō,vərst 'sīn }
- cover sheet** See emulsion sheet. { 'kāv-ər ,shēt }
- coversine** See covered sine. { 'kō,vərst 'sīn }
- cover** [ECOL] A refuge or shelter, such as a coppice, for game animals. [TEXT] A tightly woven woolen twill fabric made by using a single-color yarn for filling threads and yarns in two different shades in the warp. { 'kō-vər }
- covey** [VERT ZOO] 1. A brood of birds. 2. A small flock of birds of one kind, used typically of partridge and quail. { 'kōv-ē }
- covite** [PETR] A rock of igneous origin composed of sodic orthoclase, hornblende, sodic pyroxene, nepheline, and accessory sphene, apatite, and opaque oxides. { 'kō,vīt }
- cow** [AGR] A domestic bovine of any sex or age. [VERT ZOO] A mature female cattle of the genus *Bos*. { 'kaʊ }
- Cowdria** [MICROBIO] A genus of the tribe Ehrlichieae; coccid to ellipsoidal, pleomorphic, or rod-shaped cells; intracellular parasites in cytoplasm and vacuoles of vascular endothelium of ruminants. { 'kōv-drē-ə }
- Cowell method** [AERO ENG] A method of orbit computation using direct step-by-step integration in rectangular coordinates of the total acceleration of the orbiting body. { 'kōv-əl ,meth-əd }
- cowling** [AERO ENG] The streamlined metal cover of an aircraft engine. [ENG] A metal cover that houses an engine. { 'kōv-līŋ }
- cowoven fabric** [TEXT] A fabric woven of two different types of fibers. { 'kō,vō-vən 'fab-rik }
- cowpea** [BOT] *Vigna sinensis*. An annual legume in the order Rosales cultivated for its edible seeds. Also known as blackeye bean. { 'kōv,pē }
- Cowper's gland** See bulbourethral gland. { 'kūp-ərz ,glānd }
- cowpox** See vaccinia. { 'kōv,pāks }
- cowpox virus** [VIROL] The causative agent of cowpox in cattle. { 'kōv,pāks ,vī-rəs }
- cowshee** See kaus. { 'kōv-she }
- coxa** [INV ZOO] The proximal or basal segment of the leg of insects and certain other arthropods which articulates with the body. { 'kōks-ə }
- coxal cavity** [INV ZOO] A cavity in which the coxa of an arthropod limb articulates. { 'kōks-əl 'kāv-əd-ē }
- coxal gland** [INV ZOO] One of certain paired glands with ducts opening in the coxal region of arthropods. { 'kōks-əl 'glānd }
- Cox chart** [CHEM] A straight-line graph of the logarithm of vapor pressure against a special nonuniform temperature scale; vapor pressure-temperature lines for many substances intersect at a common point on the Cox chart. { 'kōks ,çhārt }
- Coxiella** [MICROBIO] A genus of the tribe Rickettsieae; short rods which grow preferentially in host cell vacuoles. { 'kōks-ē-ə-ē-ə }
- coxitis** [MED] Inflammation of the hip joint. { 'kōks-īd-əs }
- coxopodite** [INV ZOO] The basal joint of a crustacean limb. { 'kōks-ōp-əd-īt }
- coxsackie disease** [MED] A variety of syndromes resulting from a coxsackievirus infection. { 'kōks-āk-ē dī'zēz }
- coxsackievirus** [VIROL] A large subgroup of the enteroviruses in the picornavirus group including various human pathogens. { 'kōks-āk-ē ,vī-rəs }
- coyote** [VERT ZOO] *Canis latrans*. A small wolf native to western North America but found as far eastward as New York State. Also known as prairie wolf. { 'kōj-ōd-ē }
- coyote blasting** [MIN ENG] A method of blasting in which large charges are fired in small adits or tunnels driven at the level of the floor, in the face of a quarry or the slope of an open-pit mine. Also known as coyote-hole blasting; gopher-hole blasting; heading blasting. { 'kōj-ōd-ē ,blāst-ŋ }
- coyote hole** See gopher hole. { 'kōj-ōd-ē ,hōl }

COATI

Common coati (*Nasua nasua*).

COAXIAL CABLE



Cutaway view of coaxial transmission line.

direction of travel of a radio wave when it crosses a shoreline obliquely. Also known as land effect. ('kōstəl rī'frak-shən)

coastal sediment [GEOL] The mineral and organic deposits of deltas, lagoons, and bays, barrier islands and beaches, and the surf zone. ('kōstəl 'sed-ə-mənt)

coast chart [NAV] A nautical chart for use in inshore, coastwise navigation when a course carries a vessel inside outlying reefs and shoals, for use in entering or leaving bays and harbors of considerable size, or for use in navigating larger inland waterways. ('kōst, chārt)

coaster [NAV ARCH] A small merchant ship, about 200 feet (61 meters) long, which operates near coasts, in rivers and estuaries, and on short ocean passages. ('kō-stər)

coast guard [ORD] A naval force which guards a coast and ensures the order, safety, and effective operation of traffic on the coastal waters. ('kōst, gārd)

coast guard cutter [NAV ARCH] A small, armed boat in a coast guard. ('kōst, gārd, kəd-ər)

Coast Guard lines [NAV] Lines established by the U.S. Coast Guard for separating areas of the sea where the inland rules of the road apply, from those areas where the international rules apply. ('kōst, gārd, līnz)

Coast Guard station [NAV] In American usage, any building on the coast used to house personnel and equipment for saving life at sea. Also known as life-saving station. ('kōst, gārd, stā-shən)

coast ice See fast ice. ('kōst, īs)

coasting [NAUT] Proceeding approximately parallel to a coastline and near enough to be in pilot waters most of the time. ('kōst-ŋ)

coasting flight [AERO ENG] The flight of a rocket between burnout or thrust cutoff of one stage and ignition of another, or between burnout and summit altitude or maximum horizontal range. ('kōst-ŋ, flīt)

coastline [GEOGR] 1. The line that forms the boundary between the shore and the coast. 2. The line that forms the boundary between the water and the land. ('kōst, līn)

coastlining [MAP] The process of obtaining data from which the coastline can be drawn on a chart. ('kōst, līn-ŋ)

coast pilot [NAV] A book serving as an adjunct to nautical charts, containing important information which cannot be shown conveniently on the charts, and not readily available elsewhere: prepared by the U.S. Coast and Geodetic Survey for coastal waters of continental United States, Hawaii, the Virgin Islands, and Puerto Rico; and by the U.S. Naval Oceanographic Office for foreign waters. Also known as sailing directions. ('kōst, pī-lət)

coast piloting [NAV] The directing of the movements of a vessel near a coast by means of terrestrial reference points. ('kōst, pī-ləd-ŋ)

coast shelf See submerged coastal plain. ('kōst, shelf)

coastwise navigation [NAV] Navigation in the vicinity of a coast, in contrast to offshore navigation at a distance from a coast. ('kōst, wīz, nāv-ə'gā-shən)

coated abrasive [MATER] An abrasive product having the abrasive particles attached to a backing material with glue or a synthetic resin. ('kōd-əd ə'brā-siv)

coated cathode [ELECTR] A cathode that has been coated with compounds to increase electron emission. ('kōd-əd 'kath-əd)

coated electrode [MET] A wire covered with metal oxides and silicates and used as a filler-metal electrode in arc welding. Also known as covered electrode. ('kōd-əd i'lek,tūd)

coated fabric [TEXT] A fabric that has been coated, covered, or impregnated with substances such as lacquer, varnish, rubber, or polymers. ('kōd-əd 'fab-rīk)

coated filament [ELECTR] A vacuum-tube filament coated with metal oxides to provide increased electron emission. ('kōd-əd 'fil-ə-mənt)

coated lens [OPTICS] A lens whose surfaces have been coated with a thin, transparent film having an index of refraction that minimizes light loss by reflection. ('kōd-əd 'lens)

coated paper [MATER] Paper with a surface coating of clay and other materials to produce a smooth, shiny surface; especially useful for fine, detailed, blur-free reproductions in color or black and white. Also known as enamel paper. ('kōd-əd 'pā-pər)

coated pit [CYTOL] A cell surface depression that is coated

with clathrin on its cytoplasmic surface and functions in receptor-mediated endocytosis. ('kōd-əd 'pīt)

coat hanger die [ENG] A plastics-sheet slot die shaped like a coat hanger on the inside. ('kōt, hāŋ-ər, dī)

coati [VERT ZOO] The common name for three species of carnivorous mammals assigned to the raccoon family (Procyonidae) characterized by their elongated snout, body, and tail. ('kō-wād-ē)

coating [MATER] 1. Any material that will form a continuous film over a surface. 2. The film formed by the material. ('kōd-ŋ)

coating density ratio [MET] In thermal spraying, the ratio of actual density to theoretical density of the coating material used. ('kōd-ŋ, dēnsəd-ē, rāsh-ō)

coax See coaxial cable. ('kō,aks)

coaxial [MECH] Sharing the same axes. [MECH ENGR] Mounted on independent concentric shafts. ('kō'aks-ē-əl)

coaxial antenna [ELECTROMAG] An antenna consisting of a quarter-wave extension of the inner conductor of a coaxial line and a radiating sleeve that is in effect formed by folding back the outer conductor of the coaxial line for a length of approximately a quarter wavelength. ('kō'aks-ē-əl ən'ten-ə)

coaxial attenuator [ELECTROMAG] An attenuator that has a coaxial construction and terminations suitable for use with coaxial cable. ('kō'aks-ē-əl ə'ten-yə, wād-ər)

coaxial bolometer [ELECTR] A bolometer in which the desired square-law detection characteristic is provided by a fine Wollaston wire element that has been thoroughly cleaned before being axially located and soldered in position in its cylinder. ('kō'aks-ē-əl bə'lōm-əd-ər)

coaxial cable [ELECTROMAG] A transmission line in which one conductor is centered inside and insulated from an outer metal tube that serves as the second conductor. Also known as coax; coaxial line; coaxial transmission line; concentric cable; concentric line; concentric transmission line. ('kō'aks-ē-əl 'kē-bəl)

coaxial capacitor See cylindrical capacitor. ('kō'aks-ē-əl 'kə-pas-əd-ər)

coaxial cavity [ELECTROMAG] A cylindrical resonating cavity having a central conductor in contact with its pistons or other reflecting devices. ('kō'aks-ē-əl 'kav-əd-ē)

coaxial cavity magnetron [ELECTR] A magnetron which achieves mode separation, high efficiency, stability, and ease of mechanical tuning by coupling a coaxial high Q cavity to a normal set of quarter-wavelength vane cavities. ('kō'aks-ē-əl 'kav-əd-ē 'magnə-trən)

coaxial circles [MATH] Family of circles such that any pair have the same radical axis. ('kō'aks-ē-əl 'sərkəlz)

coaxial connector [ELECTROMAG] An electric connector between a coaxial cable and an equipment circuit, so constructed as to maintain the conductor configuration, through the separable connection, and the characteristic impedance of the coaxial cable. ('kō'aks-ē-əl 'kə-nēk-tər)

coaxial-cylinder magnetron [ELECTR] A magnetron in which the cathode and anode consist of coaxial cylinders. ('kō'aks-ē-əl, sil-ənd-ər 'magnə-trən)

coaxial cylinders [MATH] Two cylinders whose cylindrical surfaces consist of the lines that pass through concentric circles in a given plane and are perpendicular to this plane. ('kō'aks-ē-əl 'sil-ənd-ərz)

coaxial diode [ELECTR] A diode having the same outer diameter and terminations as a coaxial cable, or otherwise designed to be inserted in a coaxial cable. ('kō'aks-ē-əl 'dī-əd)

coaxial filter [ELECTROMAG] A section of coaxial line having reentrant elements that provide the inductance and capacitance of a filter section. ('kō'aks-ē-əl 'fīlt-ər)

coaxial hybrid [ELECTROMAG] A hybrid junction of coaxial transmission lines. ('kō'aks-ē-əl 'hī-brəd)

coaxial isolator [ELECTROMAG] An isolator used in a coaxial cable to provide a higher loss for energy flow in one direction than in the opposite direction; all types use a permanent magnetic field in combination with ferrite and dielectric materials. ('kō'aks-ē-əl 'ī-sə-lād-ər)

coaxial line See coaxial cable. ('kō'aks-ē-əl 'līn)

coaxial-line resonator [ELECTROMAG] A resonator consisting of a length of coaxial line short-circuited at one or both ends. ('kō'aks-ē-əl, līn 'rez-ən-əd-ər)

coaxially fed linear array [ELECTROMAG] A beacon antenna

separately excited

septicidal

1795

loaded separately into the gun; no cartridge case is utilized in this type of ammunition. ('sep-rat' lōd-īŋ, am-ryō'nish-ŋ)

separately excited [ELEC] Obtaining excitation from a source other than the machine or device itself. ('sep-rat-lē ik'sid-əd)

separate sewage system [CIV ENG] A drainage system in which sewage and groundwater are carried in separate sewers. ('sep-rat' sū-ij, sist-əm)

separating calorimeter [PHYS] A device for measuring the moisture content of steam. ('sep-ə, rād-īŋ, kal-ə-rim-əd-ər)

separating power [CHEM ENG] The measure of the ability of a system (such as a rectifying system) to separate the components of a mixture, when the components have increasingly close boiling points. ('sep-ə, rād-īŋ, paū-ər)

separating transcendence base [MATH] A transcendence base of a field E over a field F such that E is algebraic and separable over the field generated by F and the transcendence base. ('sep-ə, rād-īŋ tran'sen-dens, bās)

separation [AERO ENG] The action of a fallaway section or companion body as it casts off from the remaining body of a vehicle, or the action of the remaining body as it leaves a fallaway section behind it. [CHEM ENG] The separation of liquids or gases in a mixture, as by distillation or extraction. [ENG] 1. The action segregating phases, such as gas-liquid, gas-solid, liquid-solid. 2. The segregation of solid particles by size range, as in screening. [ENG ACOUS] The degree, expressed in decibels, to which left and right stereo channels are isolated from each other. [GEOL] The apparent relative displacement on a fault, measured in any given direction. [MIN ENG] The removal of gangue from raw ores, as in frothing. ('sep-ə'rā-shən)

separation axioms [MATH] Properties of topological spaces such as Hausdorff, regular, and normal which reflect how points and closed sets may be enclosed in disjoint neighborhoods. ('sep-ə'rā-shən'ak-sē-ŋmz)

separation disk [BOT] A layer of gelatinous material between two adjacent negative cells in some blue-green algae; associated with hormogonium formation. ('sep-ə'rā-shən, disk)

separation energy [NUC PHYS] The energy needed to remove a proton, neutron, or alpha particle from a nucleus. ('sep-ə'rā-shən, en-er-jē)

separation factor [NUCLEO] The abundance ratio of two isotopes after processing, divided by their abundance ratio before processing. ('sep-ə'rā-shən, fak-tor)

separation filter [ELECTR] Combination of filters used to separate one band of frequencies from another. ('sep-ə'rā-shən, filter)

separation layer [BOT] A structurally distinct layer of the abscission zone of a plant containing abundant starch and dense cytoplasm. ('sep-ə'rā-shən, lā-ər)

separation negatives [GRAPHICS] The negatives made from full-color originals and used in the preparation of colorplates; four negatives are made, for yellow, magenta, cyan, and black printing plates. ('sep-ə'rā-shən'neg-əd-ivz)

separation of variables [MATH] 1. A technique where certain differential equations are rewritten in the form $f(x)dx = g(y)dy$ which is then solvable by integrating both sides of the equation. 2. A method of solving partial differential equations in which the solution is written in the form of a product of functions, each of which depends on only one of the independent variables; the equation is then arranged so that each of the terms involves only one of the variables and its corresponding function, and each of these terms is then set equal to a constant, resulting in ordinary differential equations. Also known as product-solution method. ('sep-ə'rā-shən əv'ver-ē-bəlz)

separation theorem [CONTR SYS] A theorem in optimal control theory which states that the solution to the linear quadratic Gaussian problem separates into the optimal deterministic controller (that is, the optimal controller for the corresponding problem without noise) in which the state used is obtained as the output of an optimal state estimator. ('sep-ə'rā-shən, thir-əm)

separative work unit [NUC PHYS] A fundamental measure of work required to separate a quantity of isotopic mixture into two component parts, one having a higher percentage of concentration of the desired isotope and one having a lower percentage. ('sep-əd-iv'wɜ:k, yu-nit)

separator [COMPUT SCI] A datum or character that denotes the beginning or ending of a unit of data. [ELEC] A porous insulating sheet used between the plates of a storage battery.

[ELECTR] A circuit that separates one type of signal from another by clipping, differentiating, or integrating action. [ENG] 1. A machine for separating materials of different specific gravity by means of water or air. 2. Any machine for separating materials, as the magnetic separator. [MECH ENG] See cage. [PETRO ENG] See gas-oil separator. ('sep-ə, rād-ər)

separator-filter [ENG] A vessel that removes solids and entrained liquid from a liquid or gas stream, using a combination of a baffle or coalescer with a screening (filtering) element. ('sep-ə, rād-ər'filter)

separator page [COMPUT SCI] A page preceding or following a report in a computer printout giving all information needed to identify the report. ('sep-ə, rād-ər, pāj)

separatory funnel [CHEM] A funnel-shaped device used for the careful and accurate separation of two immiscible liquids; a stopcock on the funnel stem controls the rate and amount of outflow of the lower liquid. ('sep-ə, tōr-ē'fən-əl)

sepatrix [CONTR SYS] A curve in the phase plane of a control system representing the solution to the equations of motion of the system which would cause the system to move to an unstable point. ('sep-ə, triks)

sephia [MATER] A brown pigment prepared from the dried, inky exudation of a cuttlefish; used as a dye and in watercolors and ink. ('sē-pe-ə)

sephia negative See vandyke. ('sē-pe-ə'neg-əd-iv)

Sepiolidae [INV ZOO] An order of the molluscan subclass Coleoidea having a well-developed eye, an internal shell, fins separated posteriorly, and chromatophores in the dermis. ('sē-pe-oid-ē-ə)

sepiolite [MINERAL] $Mg_4(Si_2O_5)_2(OH)_2 \cdot 6H_2O$ A soft, lightweight, absorbent, white to light-gray or light-yellow clay mineral, found principally in Asia Minor; used for tobacco pipe bowls and ornamental carvings. Also known as meerscham; sea-foam. ('sē-pe-ə, lit)

Sepsidae [INV ZOO] The spiny-legged flies, a family of myodarian cyclorhaphous dipteran insects in the subsection Acalypterata; development takes place in decaying organic matter. ('sep-sā, dē)

sepsis [MED] 1. Poisoning by products of putrefaction. 2. The severe toxic, febrile state resulting from infection with pyogenic microorganisms, with or without associated septicemia. ('sep-sās)

septal filament [INV ZOO] In anthozoans, the free edges of the septum containing gland cells and nematocysts. ('sept-əl'fil-ə-mēt)

septal ostium [INV ZOO] Any of the openings in septa of anthozoans. ('sept-əl'8s-tē-əm)

septarian [GEOL] Pertaining to the irregular polygonal pattern of internal cracks developed in septaria. ('sep'tar-ē-ən)

septarian boulder See septarium. ('sep'tar-ē-ən'bōl-dər)

septarian nodule See septarium. ('sep'tar-ē-ən'nōd-əl)

septarium [GEOL] A large (32-36 inches or 80-90 centimeters in diameter), spheroidal concretion, usually composed of argillaceous carbonate, characterized by internal cracking into irregular polygonal blocks that become cemented together by crystalline minerals. Also known as beetle stone; septarian boulder; septarian nodule; turtle stone. ('sep'tar-ē-əm)

septate [BIOL] Having a septum. ('sep,tāt)

septate coaxial cavity [ELECTROMAG] Coaxial cavity having a vane or septum, added between the inner and outer conductors, so that it acts as a cavity of a rectangular cross section bent transversely. ('sep,tāt kō'ak-sē-əl'kav-əd-ē)

septate waveguide [ELECTROMAG] Waveguide with one or more septa placed across it to control microwave power transmission. ('sep,tāt'wāv,gīd)

Septibranchia [INV ZOO] A small order of bivalve mollusks in which the anterior and posterior adductor muscles are about equal in size, the foot is long and slender, and the gills have been transformed into a muscular septum. ('sep'tə'brang-kē-ə)

septic [MED] Of or pertaining to sepsis. ('sep-tik)

septic abortion [MED] An abortion complicated by acute infection of the endometrium. ('sep-tik ə'bōr-shən)

septic embolus [MED] An embolus formed by bacteria. ('sep-tik'em-bō-ləs)

septicemia [MED] A clinical syndrome in which infection is disseminated through the body in the bloodstream. Also known as blood poisoning. ('sep-tə'sē-mē-ə)

septicidal [BOT] A type of dehiscence exhibited by some fruit